

This Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-7 (canceled).

8. (currently amended) A residual current detection device for continuously monitoring to detect imbalances between currents flowing to a load in one or more phase lines and from said load in a neutral line, comprising:

a plurality of resistive shunts, each connected in series with one of said phase lines and said neutral line; and

circuitry for continuously monitoring to detect an imbalance between said currents flowing through the resistive shunts, said circuitry comprising:

an analog-to-digital converter provided for each of the resistive shunts, said analog-to-digital converter for sensing a voltage developed across a corresponding one of the resistive shunts and generating digital signals indicative of the current flowing through the corresponding one of the resistive shunts, said analog-to-digital converter being included in an integrated circuit mounted on and electrically connected to the corresponding one of the resistive shunts.

9. (currently amended) The residual current detection device of claim 8, wherein the circuitry further comprises:

~~a voltage sensor provided for each of the resistive shunts for sensing a voltage developed across the resistive shunt and generating signals indicative of the current flowing through the resistive shunts; and~~

a processor for receiving the digital signals from said analog-to-digital converter provided for each of the resistive shunts ~~the voltage sensors~~ and processing the digital signals to detect the imbalance between the currents flowing through the resistive shunts.

10. (canceled).

11. (currently amended) The residual current detection device of claim ~~9~~10, said circuitry further comprising an isolation barrier through which the analog-to-digital converter is connected to the processor.

12. (currently amended) The residual current detection device of claim ~~8~~10, wherein the resistive shunt comprises a composite strip having conductive portions at its ends and a resistive portion in the middle interconnecting the conductive portions.

13. (currently amended) The residual current detection device of claim ~~8~~10, wherein the analog-to-digital converter comprises a delta-sigma modulator for producing as the digital signals a high-frequency one-bit digital data stream.

14. (currently amended) The residual current detection device of claim ~~9~~13, wherein the analog-to-digital converter comprises a delta-sigma modulator for producing as the digital signals a high-frequency one-bit digital data stream, and further comprising a decimation filter for converting the high-frequency one-bit digital data stream to a lower frequency multi-bit digital data stream to be processed by the processor.

15. (canceled).

16. (previously presented) The residual current detection device of claim 12, wherein the conductive portions are comprised of copper and the resistive portion is comprised of manganin.

17. (currently amended) The residual current detection device of claim 12, wherein ~~said the analog-to-digital converter is included in an~~ integrated circuit ~~has~~ having a terminal connected to a voltage reference source and a second converter for providing a digital signal stream dependent on a voltage at one of the conductive portions of the associated resistive shunt.

18. (currently amended) The residual current detection device of claim 8, wherein ~~said circuitry~~ further comprises ~~comprising~~ means for measuring power consumption by the load.

19. (currently amended) The residual current detection device of claim 8, wherein ~~said circuitry~~ further comprises ~~comprising~~ an actuator for performing the function of a conventional circuit breaker.

20. (currently amended) The residual current detection device of claim ~~8~~9, wherein ~~said circuitry~~ further comprises ~~comprising~~ means for measuring power consumption by the load.

21. (currently amended) The residual current detection device of claim ~~8~~9, wherein ~~said circuitry~~ further comprises ~~comprising~~ an actuator for performing the function of a conventional circuit breaker.

22. (currently amended) A method of monitoring to detect current imbalance in a residual current detection device between one or more phase lines and a neutral line through which currents respectively flow to and from a load, said method comprising the steps of:

employing a plurality of resistive shunts;

placing ~~each of the~~ a resistive ~~shunts-shunt~~ in series with a corresponding one ~~each~~ of said phase lines and said neutral line;

measuring the current flowing through each ~~of the~~ resistive ~~shunts-shunt~~, said ~~measuring comprising for each of the resistive shunts:~~

providing an analog-to-digital converter for a corresponding one of the ~~resistive shunts,~~

employing said analog-to-digital converter for sensing a voltage ~~developed across the corresponding one of the resistive shunts and generating digital signals~~ indicative of the current flowing through the corresponding one of the resistive shunts, and

including said analog-to-digital converter in an integrated circuit ~~mounted on and electrically connected to the corresponding one of the resistive shunts; and~~

continuously monitoring the measured currents to detect an imbalance between the currents flowing through the resistive shunts.

23. (currently amended) The method of claim 22, wherein ~~the measuring step comprises sensing voltages developed across the resistive shunts and generating therefrom signals indicative of the currents flowing through the resistive shunts, and~~ the continuously monitoring step comprises processing the digital signals to determine the imbalance between the currents flowing through the resistive shunts.

24-25. (canceled).

26. (currently amended) The method of claim ~~22~~25, further comprising generating the digital signals as a digital signal stream dependent on a voltage on one end of the corresponding one of the resistive ~~shunts~~shunt.

27. (currently amended) The method of claim ~~23~~24, wherein the digital signals are a high-frequency one-bit digital data stream produced by a delta-sigma modulator, further comprising the step of converting the high-frequency one-bit digital data stream into a lower frequency multi-bit digital data stream to be processed to determine the imbalance between the currents flowing through the resistive shunts.